zoic formations, Mr. Lacoe also sent to the Museum examples of the Cretaceous and Tertiary flora of Colorado, studied and partially published by Lesquereux, and an interesting lot of specimens of Triassic and Paleozoic fishes and crustacea, studied by Cope, Hall, Whitfield and others; also a collection of 800 Dakota Group plants, about 125 of which are described by Lesquereux in Monograph XVII. of the United States Geological Survey, on the "Flora of the Dakota Group."

A portion of the Collection will be placed on exhibition, as soon as it can be labeled and installed.

Mr. Lacoe formally offered the collection to the Museum in December, 1891, in a letter to Prof. Lester F. Ward, an old friend and correspondent, expressing his belief that this disposition of it would best insure the fulfillment of his purpose in its formation, which was primarily to bring together in one place as complete a collection as possible of the older fossil flora, for use in scientific research, the conditions imposed being merely that the Collection should be kept entire, with such additions as may hereafter be made to it by exchange of duplicates or subsequent contributions by the donor; that it be known as 'The Lacoe Collection,' and that it be accessible to scientists and students without distinction, provision being made for the proper preservation of the specimens from loss or injury.

The acquisition of this wealth of material makes the National Museum an important reference center for all future comprehensive work in this field. The Lacoe Collection is a noble monument to the public spirit and generous enthusiasm of its founder.

G. Brown Goode.

NOTE ON THE DEVONIAN PALÆOSPONDYLUS.

In my review of Dr. Dean's 'Fishes, living and fossil,' I have ventured to suggest an ordinal name for the remarkable *Palæospondylus Gunni*, discovered by Dr. Traquair in the Caithness Flagstones. I now give reasons for so doing.

The "*Palæospondylus Gunni* is a very small organism, usually under one inch in length, though exceptionally large specimens occasionally measure one inch and a-half * * *. It has a head and vertebral column, but no trace of jaws or limbs; and, strange to say, all the specimens are seen only from the ventral aspect, as is shown by the relation of the neural arches to the vertebral centra.

"The head is in most cases much eroded * * *. It is divided by a notch * * * into two parts * * *. The *anterior part* shows a groove the edges of which are elevated, while the surface on each side shows two depressions like fenestræ, though perhaps they are not completely perforated, and also a groove partially dividing off, posteriorly and externally, a small lobe. In front there is a ring-like opening * * * surrounded by small pointed cirri, four ventrally, at least five dorsally, and two long lateral ones which seem to arise inside the margin of the ring instead of from its rim like the others. The *posterior part* of the cranium is flattened, but the median groove is still observable. Connected with the posterior or occipital aspect of the skull are two small narrow plates which lie closely alongside the first half dozen vertebræ."

"The bodies of the vertebræ are hollow or ring-like, and those immediately in front are separated from each other by perceptible intervals; their surfaces are marked with a few little longitudinal grooves, of which one is median. They are provided with neural arches, which are at first short and quadrate, but towards the caudal extremity lengthen out into slender neural spines, which form the dorsal expansion of a caudal fin, while shorter hæmal ones are also developed on the ventral aspect."

Such are the essential features of *Palæospondylus* as recorded by Dr. Traquair in 'The Annals of Scottish Natural History' (III., p. 94–98, pl. 3, 1894). He maintained that "there seems no escape from the conclusion that the little creature must be classed as a Marsipobranch" and that, "if *Palæospondylus* is not a Marsipobranch, it is quite impossible to refer it to any other existing group of vertebrates."

Dr. Dean in a recent note 'on the supposed kinship of the Palæospondylus' (SCIENCE, N. S., III., p. 214) claims to have discovered 'a series of transversely directed rays, arising from the region of the post-occipital plates of Traquair' which, in his opinion, 'warrant the belief that this lamprey-like form was possessed of paired fins, a character decidedly adverse to the now widely accepted view of Marsipobranchian affinities.'

In the case of the little animal in question, we have to deal with matters of observation first and then of interpretation. The latter, however, largely preponderate for even what is represented as being seen must be the result of interpretation of traces or filling-up of outlines; of course, then, taxonomic deductions must stand or fall in the ratio of the correctness or failure of the interpretation as well as observation.

Assuming the correctness of Dr. Traquair's description and figures, we certainly have a remarkable combination of characters. On the one hand, if the 'median opening or rim' is indeed nasal, the animal certainly cannot be referred to the class of Selachians or of Teleostomes. On the other hand, the cranium and the segmented vertebral column indicate a more advanced stage of development of the vertebrate line than that from the living Marsipobranchs must have originated. We may, therefore, with propriety isolate it as the representative not only of a peculiar family (*Palæospondylidæ*), but of an order or even subclass (Cycliæ) of vertebrates which may provisionally (and only provisionally) be retained in the class of Marsipobranchs.

The group may be defined as Monorrhines with a continuous (?) cranium, a median nasal (?) ring, and a segmented vertebral column.

The name Cycliæ has been constructed on the model of the classical names *Acanthias*, *Anthias*, *Xiphias*, etc., and is derived from κύκλος circle, and the termination -ιας, *i. e.*, cyclias in the plural number. The word is descriptive and will fit, whatever interpretation may be put on the ring-like structure.

The differences between the Hyperoartia and Hyperotreta are very great, and Prof. Lankester did not go much too far when he elevated those groups to class rank. Among the numerous distinctive characters are the great differences in the auditory organs. Perhaps the organs of *Palæospondylus* might be worked out in some specimen and throw light on the subject of affinities. At present even the region of the auditory organs is not exactly known and we are now at a loss to orient the several parts of the cranium. In fact, the question of the relations of *Palæospondylus* is a very open one.

THEO. GILL.

[Just after this note had been sent to SCIENCE, and when the review of Dr. Dean's 'Fishes' was in page form, I had the pleasure of receiving from Dr. Dean an extract from the 'Transactions of the New York Academy Sciences, Vol. XV., pp. 101–104, plate V.,' entitled 'Is Palæospondylus a Cyclostome?' Dr. Dean concludes that "the position of the fossil * * * is certainly undefinable," but suggests that "perhaps one might most reasonably place it with the Ostracoderms among the curiously specialized off-shoots of the early chordates."]